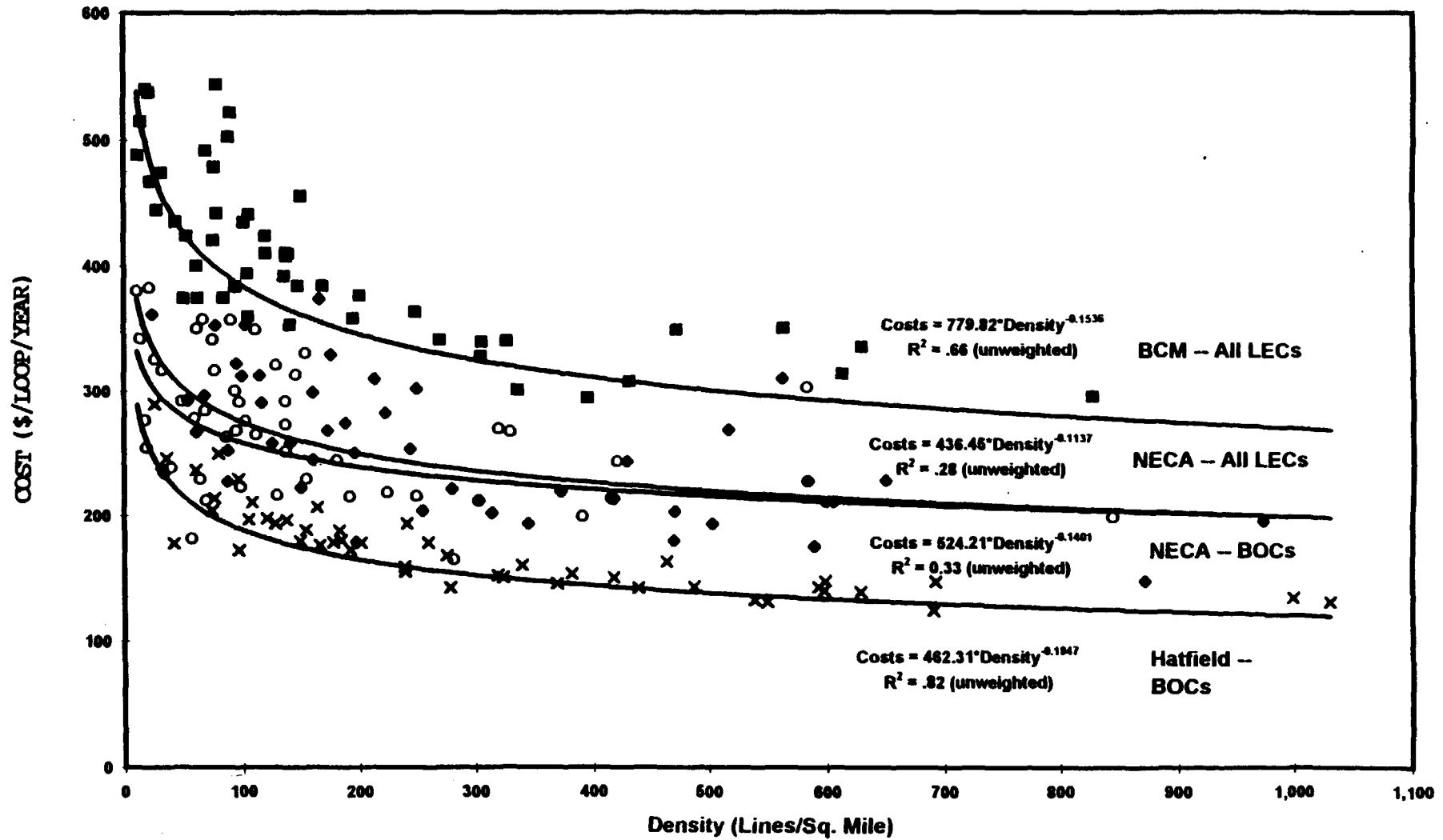


Figure 2 -- Density and Loop Costs



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In the Matter of)

The Use of Computer Models for)
Estimating Forward-Looking)
Economic Costs -)
A Staff Analysis)

CCB/CPD No. 97-2

REPLY COMMENTS

MCI and AT&T respond to several issues raised by various commenters in response to the staff report on the use of computer models for estimating forward-looking costs. Contrary to the claims of several local exchange carriers (LECs), support for universal service must be based on cost proxy models rather than LEC embedded costs, as the Joint Board correctly found in CC Docket No. 96-45. Furthermore, this Commission in CC Docket No. 96-98 and numerous state commissions have also made the same correct determination that the price of interconnection and unbundled network elements (UNEs) should be based on total element long run incremental cost (TELRIC) and calculated using proxy models. In addition, LEC claims regarding the Hatfield model and its inputs are incorrect.

We have been unable to complete an analysis of the Benchmark Cost Proxy Model (BCPM) because of problems in obtaining error-free, readable CD-ROM disks from its sponsors, but note infra several problems with the BCPM's modeling approach. Finally,

the econometric/embedded cost approach to estimating TELRIC taken by Strategic Policy Research, Inc. (SPR) will not provide a valid estimate of forward-looking TELRIC.

I. SUPPORT MUST BE COMPUTED ON FORWARD-LOOKING ECONOMIC COST, NOT INCUMBENT LEC EMBEDDED COSTS

Several of the LECs argue that support must be based on their own embedded costs.¹ Proxy cost models, they claim, should be used only to allocate a pre-determined support payment, based on their embedded cost, to areas that are smaller than the LECs' study area. Unless support is based on the LECs' embedded costs, they state, LECs will be unable to recover their historical costs.

In a world where competition in the local exchange is possible, support for universal service can no longer be based on the incumbent, or any competing, LECs' "actual" or historic costs, because support based on embedded costs is neither efficient nor incentive-compatible. For example, support should not be based on the incumbent LECs' (ILECs') embedded costs, because that would provide a windfall to the ILEC's stockholders at the expense of ratepayers that are funding the subsidy. In addition, support for a company cannot be based on that company's reported cost, because this would give the company no incentive to control its costs. Furthermore, computing support based on each company's embedded costs would require every company to report its costs on a consistent basis, which would increase regulatory burdens. Thus, a properly designed proxy model, which reflects the true cost of the network, is the only feasible

¹

See, e.g., GTE at 30, BellSouth at 7-8, NYNEX at 5-6.

method for setting both sufficient and competitively neutral universal service support in a competitive environment.

II. HATFIELD MODEL FILL FACTORS ARE CORRECT

Several of the ILECs argue that the fill factors used in a proxy model should reflect the average fill over the life of the equipment. These ILECs claim that a firm will not install a network to serve only its existing demand; instead, it will lay in extra capacity to meet expected future demand. Thus, say these ILECs, the fill factors used in a cost proxy model should not be the fill factor at which a cable will be augmented, but some average over the life of the cable of the initial fill and the maximum engineered fill.

These ILECs are only partially correct. Efficient practice may indeed require laying extra capacity beyond that needed to meet existing demand. But, if it is appropriate to install an underfilled network to accommodate growth, it is also necessary to use grown demand (not current demand) as the divisor in computing unit costs. However, extra capacity to accommodate growth should be installed only if the present value of the carrying costs of having idle excess capacity in place is less than the present value of the costs of making a second installation of cable. Thus, excess capacity will be put in place only if it will be more expensive to install more cable later. This implies that least-cost building for future demand can result only in lower unit costs. Because the Hatfield model does not engineer in grown capacity, its calculated unit costs are conservatively high.

Effective fill in the Hatfield model typically does not approach its maximum engineered default fill factors. The maximum engineered fill factors are used in Hatfield to determine when larger cable sizes should be used. Because cable comes in discrete

increments, the necessity to use a discretely larger additional cable almost always results in a much lower effective fill than the Hatfield maximum defaults. For example, if the default maximum fill in Hatfield were 80 percent, cable came only in 100 pair increments, and the demand in an area required 90 pairs, the Hatfield model would install a 200-pair cable.² This would give an effective fill of 45 percent, even though the Hatfield default fill was 80 percent. Thus, the actual fill is likely to be substantially less than the default fill factors in the model.

III. THE HATFIELD MODEL IS NOT DESIGNED TO GIVE A PRE-DETERMINED RESULT, AS SEVERAL ILECS CLAIM

Several of the ILECs claim that the Hatfield model should not be considered by the Commission because it is a self-serving model that is designed to give a pre-determined outcome. U S West, for example, claims that Hatfield "was designed to prove that the prices for access and unbundled network elements, which its sponsors desire to purchase should be as low as possible."³ Even abstracting from the fact that competitive markets do indeed tend to force prices lower than monopoly prices, it is hard to understand how U S West concludes that this was the Hatfield model's "design". Surely, if the goal of the Hatfield model's sponsors was to get as low a price as possible, then on an element by element basis, Hatfield would have adopted costs that were lower than each of the corresponding costs in BCPM, U S West's sponsored model. To the contrary, there are

² The Hatfield model would compute the needed pairs as $90 / .80$, or 113. Thus, it would select a 200 pair cable to meet this demand.

³ U S West at 3.

numerous instances in which the Hatfield Model estimates or assumes costs that are higher than BCPM.

U S West also claims that, using Hatfield switching and transport costs to estimate the cost of the interexchange carriers' (IXCs') networks results in a cost that is well below the existing price for long distance. However, the comparison of LEC tandem switching costs to IXC switching costs, and of LEC transport to IXC transport, is not a valid comparison. IXC switches perform functions (e.g., billing, database queries, etc.) other than those performed by LEC tandems, and thus have different cost characteristics. In addition, the transport cost from Hatfield is based on a SONET ring topology, and thus reflects no mileage component, since all minutes in effect travel the complete ring. The total cost per minute will therefore be determined by the total size of the ring, i.e., the larger the ring, the greater the cost. Thus, the per minute transport cost reflected in the Hatfield model reflects an average intralata SONET ring length for LECs. This average length will be much shorter than the average length of haul for IXC calls. Thus, U S West's comparison of Hatfield costs to IXC costs is mistaken and irrelevant.

GTE claims that Hatfield 3.0 substantially revised the method for computing loop investment from the method used in Hatfield 2.2.2, resulting in greater loop lengths for 29 Census Block Groups (CBGs) in GTE's territory in California, without a concomitant increase in the total investment dollars for those CBGs over the results in Hatfield 2.2.2.⁴ Hatfield 2.2.2 took one approach to estimating loop investment, which may (and apparently did) result in less loop length being laid, but compensated for this by possibly

⁴ GTE at 67, and Attachment B at 7-9.

using coarser gauge cable and other higher cost investments. In addition, the Hatfield modelers have discovered that previously they specified excessive costs for some loop structure and placement investments. In Hatfield 3.0, the approach to modeling the local loop has been revised. Occasionally, this may result in greater loop lengths at an overall lower level of cost. It should be noted that for other CBGs, costs may have moved upward from Hatfield release 2.2.2 to Hatfield release 3.0

As a result of these combined effects, only a minor change in the overall level of loop investment occurred. Far from indicating that the Hatfield model is giving a pre-determined result, this implies that the Hatfield model's two approaches, while different, give similar overall results in total investment required. Thus, the fact that the two approaches, though different, give similar results implies merely that the Hatfield 2.2.2 approach was quite reasonable for cost proxy purposes.

IV. THE HATFIELD MODEL CORRECTLY COMPUTES OVERHEAD EXPENSES

U S West claims both that Hatfield underestimates the amount of overhead expenses, and that the amount of overhead expenses claimed in Hatfield is inconsistent with the amount of overhead expenses used in AT&T's and MCI's avoided cost studies. U S West is comparing numbers that have no relationship to each other.

The Hatfield model computes general overheads by adding 10.4 percent to all direct costs. In addition to this, Hatfield directly computes certain other overhead expenses, such as general support facilities expenses. Thus, the total overheads computed in the Hatfield model exceed 10.4 percent of direct expenses, despite U S West's claim.

U S West claims further that the Hatfield level of overhead expenses is inconsistent with the level of avoided indirect expenses in avoided cost studies filed by MCI and AT&T, specifically claiming that we have said in our avoided cost studies that indirect costs change in excess of 20 percent of the change in direct costs.⁵ U S West does not specify the studies AT&T or MCI performed from which they are taking this 20 percent figure. However, from their description, it appears that they are using the percentage of avoided indirect expense. However, this percentage is simply the ratio of avoided direct expense to total expense; it has nothing to do with the ratio of overhead expense to direct expense. U S West is making a false comparison.

Even if U S West were making a valid comparison, there is no necessity for overhead ratios in the two studies to be the same. The avoided cost studies determine the avoided overhead costs for existing retail services, based on ILEC embedded costs. The Hatfield model is examining forward-looking costs for carrier-to-carrier services, and thus rightly uses a factor which determines overhead costs based on forward-looking criteria. Thus, it is likely that the embedded overheads reflected in the avoided cost studies do not match the efficient levels of overheads reflected in the Hatfield model.

V. SPR'S ECONOMETRIC APPROACH IS APPARENTLY FLAWED

Strategic Policy Research, Inc. (SPR) has submitted a "tops-down" econometric estimate of embedded incremental costs. The study uses data from 1990 to 1994 for several large LECs, and estimates equations for loop investment, switching investment, support investment, cable and wire maintenance expense, circuit equipment maintenance

⁵ U S West at 36.

expense, switching maintenance expense, general maintenance expense, and non-plant related expenses. Based on these equations, SPR purports to compute an estimate of the TELRIC for loops which is less than either Hatfield or the FCC's proxy models.⁶ We have been unable to obtain SPR's data set, but can make certain general observations on its approach.

This econometric approach has the same problem that all econometric approaches will have; it is necessarily based on the historical, embedded costs of the ILECs. As such, it will likely not represent the least-cost provision of service. In addition, this approach is simply another way of computing costs based on the LECs embedded costs. As discussed above, this is not the correct basis on which to compute universal service support.

VI. BCPM IS NOT YET A COMPLETE MODEL

We have not completed our review of BCPM, because we have been unable to read the input data filed on the CD-ROM by BCPM, and have therefore been unable to run the program. Nevertheless, we can make some general comments regarding the approach taken by BCPM, based on the description filed by its sponsors and on the statements made in the cost proxy model workshops.

First, it appears that BCPM is engineering ISDN capability on its entire loop network, with fiber pushed much further into the loop than is needed to support the services which are to receive universal service support. This has the effect of substantially raising the costs. Second, the BCPM still does not compute the cost of unbundled network elements.

⁶ They do not compare their results to the results from BCPM.

Third, the switching cost curve used in BCPM appears to be overstated and poorly specified. BCPM computes the cost per line of switches based on a regression it performs of data provided by several LECs. This regression was based on data computed from the SCIS model.⁷ However, it is not clear why the sponsors of BCPM did not simply use the vendor prices for switches that were used as inputs to SCIS directly in the BCPM, rather than relying on SCIS output to compute switch cost. In addition, the regression that BCPM uses appears ill-specified, because the estimated switch cost from the regression appears to overestimate the actual cost for mid-size to high line count switches, while understating the cost of smaller switches.⁸ In addition, BCPM excluded observations from two companies, allegedly on the grounds that it is unclear that these companies computed the switching costs consistently with the methods used by the other LECs. However, the switch costs reported by the excluded companies appear to be lower than the included data.⁹ Thus, it appears that, if all the data were used, the BCPM might compute a lower switching cost. Finally, BCPM still appears to add three percent of total costs for interoffice transport, rather than using an actual model to estimate these costs.

⁷ SCIS is a Bellcore proprietary Switching cost model.

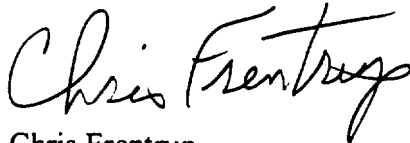
⁸ The residual plot provided by the sponsors of BCPM in Attachment 4, Appendix F of their January 7, 1997 submission in Federal-State Joint Board on Universal Service - Proxy Model Workshops on January 14-15, 1997, CC Docket No. 96-45, Response to Public Notice of December 12, 1996 (DA 96-2091) shows that the estimated switch curve used by BCPM overestimates per line switch costs for almost every switch size above 15,000 lines, while understating costs for switches of less than 15,000 lines.

⁹ Id. at Appendix C and Appendix D.

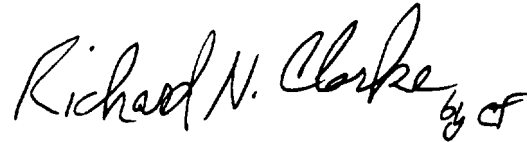
VII. CONCLUSION

Universal service support, as well as the cost of UNEs and access must be based on forward-looking economic cost. The Hatfield model is a documented, open, and user-friendly model which can estimate each of these items. The BCPM is not yet a usable model, but appears to have several flaws. In addition, the econometric approach of estimating TELRIC will simply compute costs based on the ILECs' costs, and should not be adopted.

Respectfully submitted,



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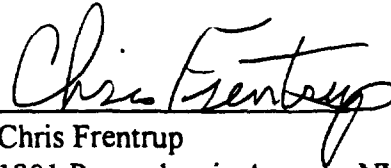


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February 24, 1997

STATEMENT OF VERIFICATION

I have read the foregoing and, to the best of my knowledge, information, and belief, there is good ground to support it, and it is not interposed for delay. I verify under penalty of perjury that the foregoing is true and correct. Executed on February 24, 1997.

A handwritten signature in cursive script, reading "Chris Frentrup". The signature is written in dark ink and is positioned above the printed name and address.

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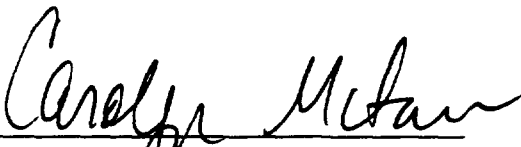
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FEDERAL COMMUNICATIONS COMMISSION
OFFICE OF SECRETARY

In the Matter of

Federal-State Joint Board on
Universal Service

CPD Docket No. 97-2

JOINT REPLY COMMENTS OF BELL ATLANTIC AND NYNEX

The Bell Atlantic telephone companies¹ ("Bell Atlantic") and the NYNEX Telephone Companies² ("NYNEX") hereby file their Joint Reply to the comments that were filed in response to a Staff paper, *The Use of Computer Models For Estimating Forward-Looking Economic Costs* ("Staff Analysis").

In jointly-filed comments, AT&T and MCI propose that the Commission rely upon the new Hatfield 3.0 proxy model for purposes of universal service, access reform, and pricing of unbundled network elements ("UNEs"). US West advocates use of its new Benchmark Cost Proxy Model ("BCPM"), which revised the previous Benchmark Cost Model 2 ("BCM2") to incorporate many principles

¹ The Bell Atlantic telephone companies are Bell Atlantic-Delaware, Inc.; Bell Atlantic-Maryland, Inc.; Bell Atlantic-New Jersey, Inc.; Bell Atlantic-Pennsylvania, Inc.; Bell Atlantic-Virginia, Inc.; Bell Atlantic-Washington, D.C., Inc.; and Bell Atlantic-West Virginia, Inc.

² The NYNEX Telephone Companies are New York Telephone Company and New England Telephone and Telegraph Company.

of Pacific Bell's Cost Proxy Model ("CPM"). Pacific Bell states that it is designing a new model based on the BCPM that will demonstrate the unreasonableness of the Hatfield model, and that it will present this model to the Commission "at our earliest convenience, but definitely in ample time for the Commission's decision in this proceeding."³

The Commission should not base its decisions in this proceeding, or in the related access reform, universal service, or interconnection proceedings, upon any of these new models. The parties have not been provided adequate notice and opportunity to comment on them.⁴ The revised BCPM was filed on January 31, 1997, but we were unable to obtain a copy on computer disk from International Transcription Service until February 6. The Hatfield 3.0 model was not made available to commenters until February 7. Moreover, as Bell Atlantic and NYNEX noted in their initial comments, the sponsors of Hatfield 3.0 and the BCPM provided very limited data to the commenters. Data for the Hatfield 3.0 model still cover only certain companies in California, Colorado, New Jersey, Washington and Texas. The BCPM sponsors initially filed data only for the state of Texas. They filed a revised model covering all states late on the last business day before the initial comments were due in this proceeding. Unfortunately, our initial attempts to analyze the BCPM have been hampered by programming errors and corrupt data. Our efforts to generate reports have failed 20% of the

³ Pacific Bell at p. 4.

⁴ See SWBT at p. 15; Ameritech at p. 1; *see also* US West at pp. 2-3.

time. As a result, it has been impossible to replicate the results reported by the sponsors.

The lack of reliable nationwide data for both models makes it impossible for commenters to evaluate them. As Bell Atlantic and NYNEX noted in their initial comments, the flaws and anomalies in a model often are not apparent from the documentation and the explanations offered by the model sponsors. Commenters need to run the models to determine how the models work and to compare the results with other models and with actual data. For instance, AT&T and MCI have altered the distribution of customers in a Census Block Group by accounting for unpopulated areas and for clustering of customers within populated areas.⁵ There is no way of knowing whether this improves the model without examining how it alters the distribution of costs.

While the Commission has granted extensions of time to allow the parties to comment on the new models, it must recognize that the sponsors have failed to provide sufficient data to permit meaningful analysis and comment. Under the Administrative Procedure Act, the Commission is required to provide notice and an opportunity for comment prior to adopting new rules.⁶ Clearly, through no fault of the Commission's, the record on the new proxy models is insufficient to allow the Commission to base any decisions on them.

⁵ See AT&T and MCI at p. 14.

⁶ See 5 U.S.C. Section 553(c).

The only models that have been presented with sufficient notice and detail are the Hatfield 2.2.2 model, the CPM, and the BCM2. In our previous comments in Dockets 80-286 and 96-45, which we incorporate herein by reference, Bell Atlantic and NYNEX demonstrated the flaws and limitations of these models.⁷ Although the model sponsors have exerted great efforts to deal with the numerous criticisms of their methodologies, it is clear at this point that the models are not sufficient to satisfy the requirements of the Telecommunications Act of 1996.

For instance, Hatfield 2.2.2 contains several flaws, which are carried over into Hatfield 3.0, including (1) unreasonably long, Commission-prescribed depreciation lives that are unrealistic in a competitive environment; (2) a lower cost of capital than the Commission prescribed in a monopoly environment; (3) expenses based on historical ARMIS expense/investment ratios applied to downward-adjusted investment levels; and (4) a network design based on the economies of scale of a monopoly provider with brand new facilities perfectly sized to current demand. These flaws ensure that the costs produced by the Hatfield Model are far below the costs that either the incumbent LEC or a new entrant would incur to provide telephone service.⁸

⁷ See CC Docket No. 80-286, Comments filed by Bell Atlantic and NYNEX on October 10, 1995 and November 9, 1995; CC Docket No. 96-45, Comments filed by Bell Atlantic and NYNEX on April 12, 1996, May 7, 1996, August 2, 1996, August 9, 1996, December 19, 1996, January 10, 1997.

⁸ See also the "Top-Down" study presented by Strategic Policy Research, Inc., which shows that the total service long run incremental costs of loops are 62

For these reasons, the Commission should not adopt any of the proposed proxy models in its pending proceedings. In our earlier filings, Bell Atlantic and NYNEX proposed alternative methods of developing universal service support and reforming the access charge regime that comply with the Act and that do not rely upon proxy models. There is no reason for the Commission to adopt flawed proxy models when reasonable alternatives are available.

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Dated: February 24, 1997

percent higher than the Commission's proxy, and that the costs of switching is 32 percent higher than the upper end of the Commission's proxy range.

CERTIFICATE OF SERVICE

I hereby certify that copies of this pleading were mailed this date, first class postage prepaid, upon the persons listed on the attached service list.



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In the Matter of

Staff's Analysis of the Use of)	CCB/CPD 97-2
Computer Models for Estimating)	
Forward-Looking Economic Costs)	

GTE's REPLY COMMENTS

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